2339-2373

2.531.01

October 20, 1986

FIELD DATA
ON-SITE SOIL SAMPLING
MONTROSE SITE
TORRANCE, CALIFORNIA

HARGIS+ASSOCIATES, INC.

Consultants in Hydrogeology

HARGIS + ASSOCIATES, INC.
Consultants in Hydrogeology

October 20, 1986

Therese B. Gioia
Environmental Protection Specialist
EPA (T 4 2)
Toxics and Waste Management Division
215 Fremont Street
San Francisco, CA 94105

RE: Montrose Site, Torrance, California

Dear Ms. Gioia:

Enclosed please find the boring logs, OVA measurements, weather condition information and a boring location map from Phase One of the on-site soil sampling at the Montrose site.

If you have any questions regarding the enclosed information, please contact our office.

Sincerely,

HARGIS + ASSOCIATES, INC.

Edward A. Nemecek
bm

Edward A. Nemecek
Senior Associate

Enclosures

cc: w/enclosures (see attached)

2340

HARGIS + ASSOCIATES INC.

MONTROSE CARBON COPY LIST:

Mr. Robert P. Ghirelli
Executive Officer
Regional Water Quality Control Board
107 S. Broadway, Room 4027
Los Angeles, CA 90012

Mr. Angelo Bellomo
Chief, Southern California Section
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Department of Health Services
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HARGIS + ASSOCIATES, INC.

2.31.2.1

FIELD DATA
ON-SITE SOIL SAMPLING
MONTROSE SITE
TORRANCE, CALIFORNIA

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TABLES

ILLUSTRATIONS

EXPLANATION FOR LOGS

Soil descriptions were compiled based on bucket auger cuttings and drive samples. Color was determined using the Munsell Soil Color Chart while grain size was determined using the June 1982 American Geological Institute Data Sheets. Sample numbers were assigned using the sample location code followed by the depth at the upper end of the brass tube. The abbreviations, H+A and H+A Split, written below the sample number indicates the sample was collected for Hargis + Associates, Inc. use. The abbreviation, E&E, indicates the sample was collected for the EPA contractor, Ecology & Environment, Inc.

The laboratory was instructed to obtain soil aliquots for analyses from the bottom of the brass tubes unless a split was taken. If a split sample was taken the laboratory was instructed to take the soil aliquots from the adjacent ends of adjoining tubes to minimize the separation of soils from which analytical results will be compared.

Soil samples were collected from all soil borings using a split tube drive sampler with the following specifications:

Sampler O.D.:	2 1/2 inches
Split Barrel:	18 inches, fitted with three 6-inch long by 2-inch I.D. thin wall brass tubes.
Drive Shoe:	Three inches effective length
Slough Barrel:	Six inches long

A bucket auger drill rig equipped with a 75 foot telescoping kelly bar and an 18-inch bucket was used to advance the hole. Samples were taken at approximately five-foot intervals between 20 to 60 feet. All boreholes were sampled at 42 feet instead of 40 feet due to a particularly dense layer at 40 feet which the sampler could not penetrate. The sampler was driven using the kelly bar. Full recovery was obtained from all sample drives. When

drilling was completed, the holes were backfilled with a mixture of bentonite slurry and soil cuttings to approximately ten feet below land surface. The remainder of the borehole was backfilled with a cement grout slurry.

An Hnu model PI-101 photoionization analyzer was used for field measurement of organic vapors in the soil samples. Organic vapor measurements were taken on soil material from the sampler other than the sample obtained for laboratory analysis. The photoionization analyzer was calibrated with isobutylene gas to read in ppm methane. Since the meter response varies with different volatile organic compounds, the readings should only be considered a qualitative indication of vapor concentration. Photoionization analyzer readings in equivalent parts per million of methane are presented on the logs at the depth interval sampled. The soil organic vapor reading is shown on the left side of the slash, and background reading, where available, is shown to the right of the slash.

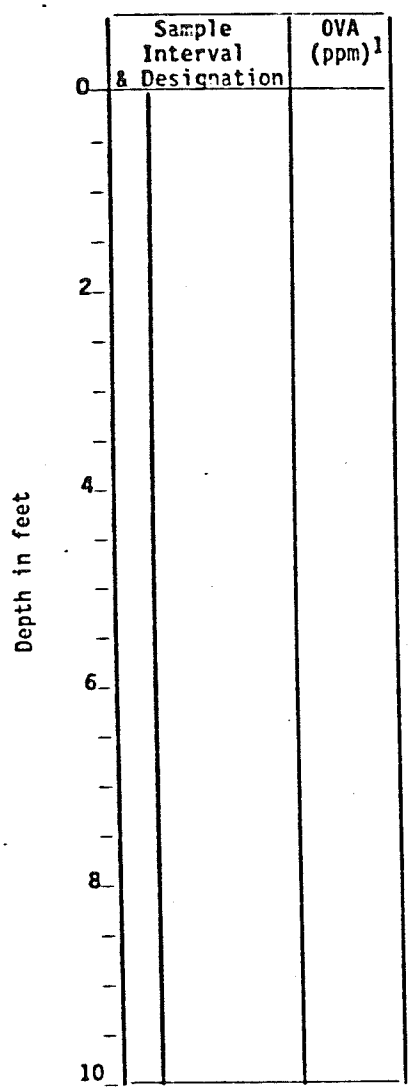
Soil boring locations are indicated on Figure 1.

Tables

TABLE 1
LOG OF SOIL BORING S-201

Date: September 26, 1986

Weather: Mostly cloudy, 72°F, light wind from southeast, 10:30.



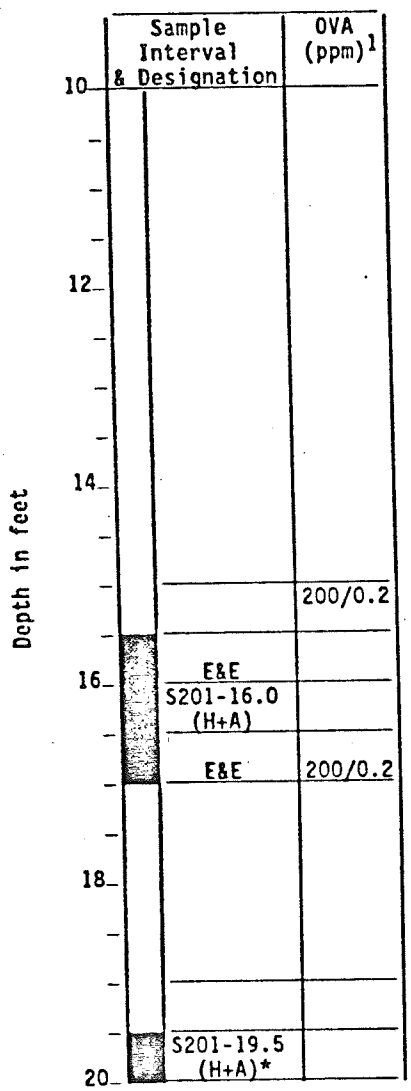
Depth Interval (feet)	Group Symbol[2]	Soil Description
0-0.25	--	ASPHALT
0.25-0.75	--	GRADE MATERIAL
0.75-8.0	--	FILL: Bricks, concrete fragments, debris in dark clay matrix, sweet odor.
8.0-11.0	SC	CLAYEY SAND: Dark brown, 10YR 5/3, slightly moist, slightly plastic, fine grained; sweet odor.

1 OVA measurements indicated are soil reading/background reading in equivalent parts per million of methane.
2 Unified Soil Classification System ASTM (D-2487)

TABLE 1
LOG OF SOIL BORING S-201 (continued)

Date: September 26, 1986

Weather:



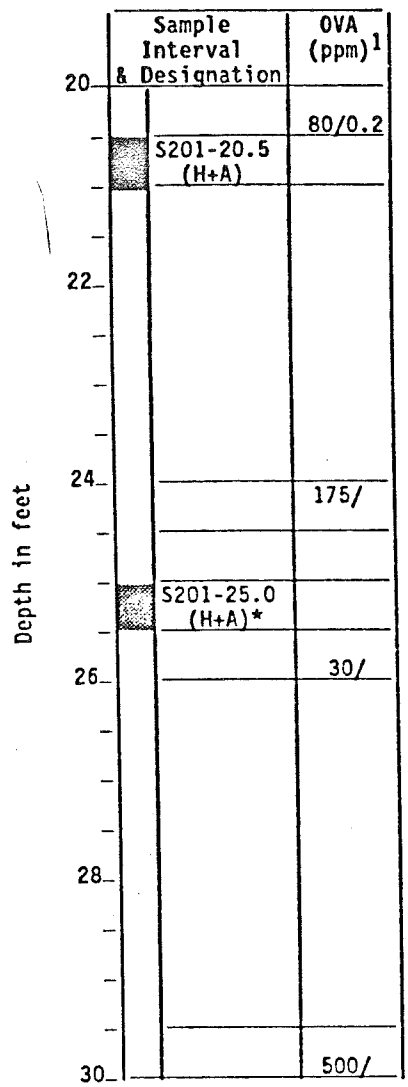
Depth Interval (feet)	Group Symbol[2]	Soil Description
11.0-13.0	CL	SANDY CLAY: Brown, 10YR 5/3, moist, moderately plastic, some very dusky red staining, 10YR 2.5/2.
13.0-14.0	CL	CLAY: Brown, 10YR 5/3, moist, trace sand, moderately plastic.
14.0-16.0	ML	SILT: Pale brown, 10YR 6/3, moist, firm, nonplastic.
16.0-20.0	ML	SAME AS 14.0-16.0 except pale red, 10YR 6/3.

* Sample to be extracted only.
1 OVA measurements indicated are soil reading/background reading in equivalent parts per million of methane.
2 Unified Soil Classification System ASTM (D-2487)

TABLE 1
LOG OF SOIL BORING S-201 (continued)

Date: September 26, 1986

Weather:



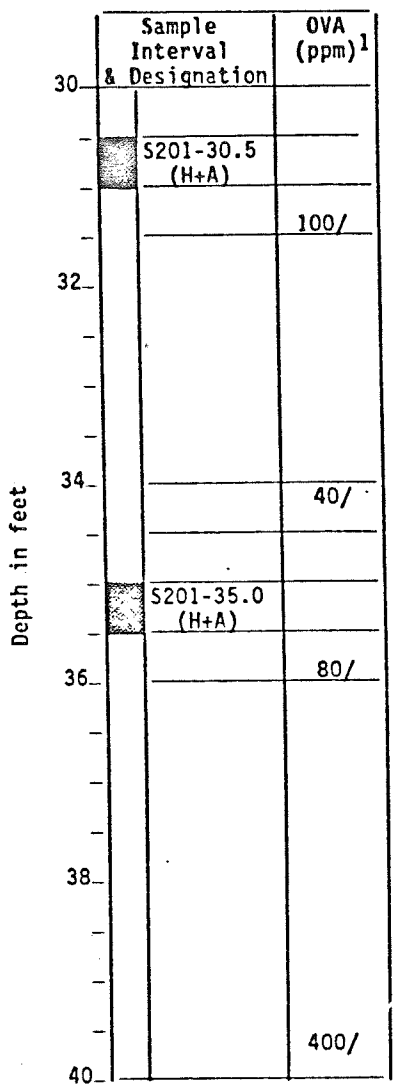
Depth Interval (feet)	Group Symbol[2]	Soil Description
20.0-23.0	CL	CLAY: Light brownish gray, 10YR 6/2, slightly moist to moist, stiff to very stiff, moderately plastic.
23.0-27.0	CL	SILTY CLAY: Light brownish gray, 10YR 6/2, slightly moist, firm, moderately plastic.
27.0-35.5	SP	SAND: Light olive brown, 2.5Y 5/4, moist, fine grained, very angular to subangular, spherical to subprismoidal, micaceous, occasional pale red silty inclusions.

* Sample to be extracted only.
1 OVA measurements indicated are soil reading/background reading in equivalent parts per million of methane.
2 Unified Soil Classification System ASTM (D-2487)

TABLE 1
LOG OF SOIL BORING S-201 (continued)

Date: September 26, 1986

Weather:



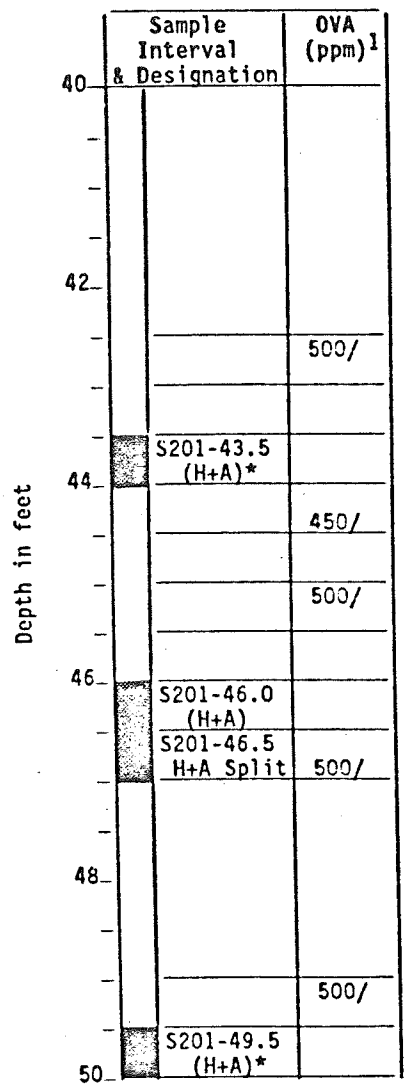
Depth Interval (feet)	Group Symbol[2]	Soil Description
27.0-35.5	SP	SAND (Continued)
35.5-36.0	SP	SAME AS 27.0-35.5 except medium to fine grained, some reddish staining.
36.0-38.0	SP	FOSSILIFEROUS SAND: very pale brown, 10YR 8/3, dense, predominantly fine to coarse grained angular fossil fragments with fine sand, poorly cemented, calcareous.
38.0-42.0	SP	SAME AS 36.0-38.0 except moderately well cemented with occasional very well cemented fossil fragments.

1 OVA measurements indicated are soil reading/background reading in equivalent parts per million of methane.
2 Unified Soil Classification System ASTM (D-2487)

TABLE 1
LOG OF SOIL BORING S-201 (continued)

Date: September 26, 1986

Weather:



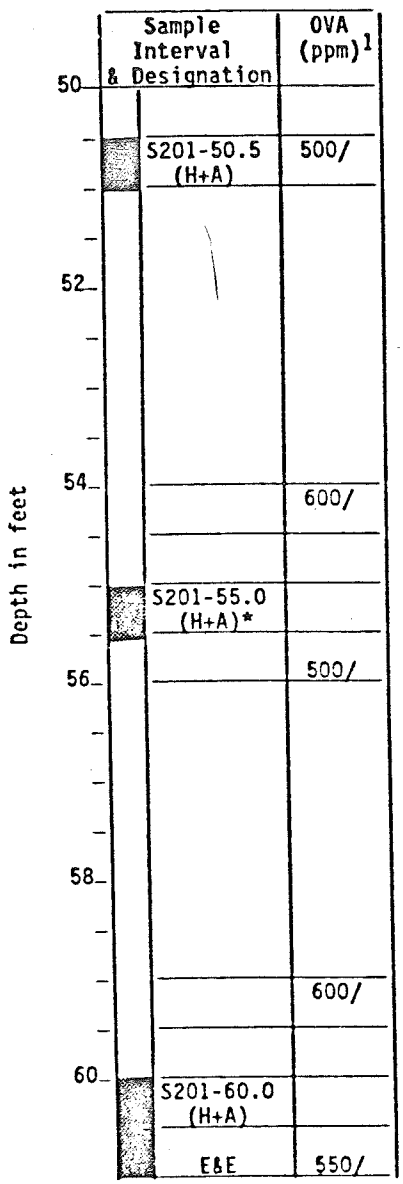
Depth Interval (feet)	Group Symbol[2]	Soil Description
38.0-42.0	SP	SAND (Continued)
42.0-56.0	SP	SAND: Light yellowish brown, 2.5Y 6/4, moist, fine grained, trace silt, very micaceous.

* Sample to be extracted only.
1 OVA measurements indicated are soil reading/background reading in equivalent parts per million of methane.
2 Unified Soil Classification System ASTM (D-2487)

TABLE 1
LOG OF SOIL BORING S-201 (continued)

Date: September 26, 1986

Weather:



Depth Interval (feet)	Group Symbol[2]	Soil Description
42.0-56.0	SP	SAND: (Continued)
56.0-59.0	SP	SAME AS 42.0-56.0 except brown, 7.5YR 5/2.
59.5-61.0	SP	SAME AS 42.0-56.0 except light gray, N 7/0, frequent inclusions of brown sand, 7.5 YR 5/2.

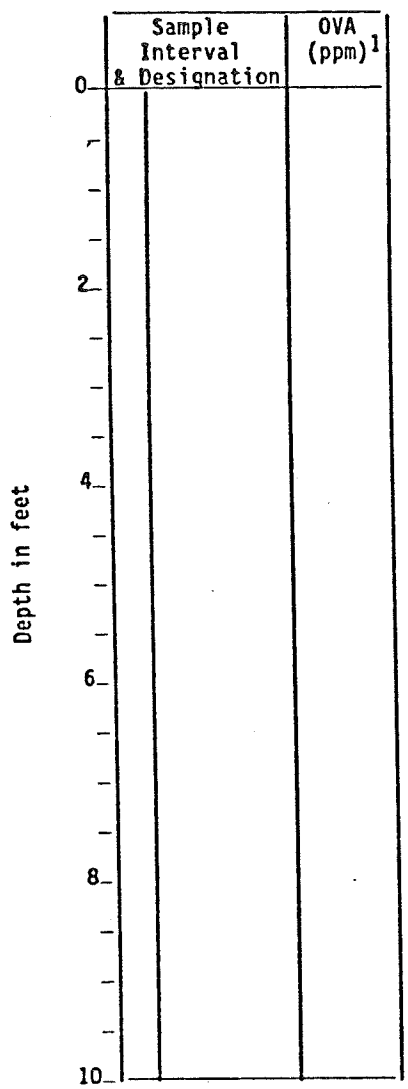
TOTAL DEPTH: 61 feet

* Sample to be extracted only.
1 OVA measurements indicated are soil reading/background reading in equivalent parts per million of methane.
2 Unified Soil Classification System ASTM (D-2487)

TABLE 2
LOG OF SOIL BORING S-202

Date: September 30,1986

Weather: Foggy to low clouds, 65°F, no wind, 07:55.



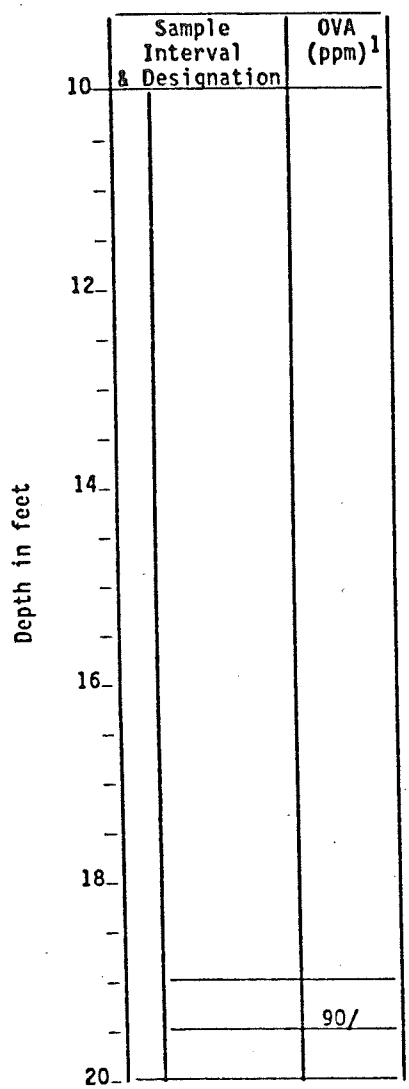
Depth Interval (feet)	Group Symbol[2]	Soil Description
0-0.2	--	ASPHALT
0.2-0.75	--	GRADE MATERIAL
0.75-7.5	--	FILL: Bricks, concrete and debris in brown clay matrix; sweet odor.
7.5-16.0	ML	SANDY SILT: Brown, 10YR 5/3, moist, firm to stiff, nonplastic; sand is fine grained; some calcareous veins, some mica.

1 OVA measurements indicated are soil reading/background reading in parts per million.
2 Unified Soil Classification system ASTM (D-2487)

TABLE 2
LOG OF SOIL BORING S-202 (continued)

Date: September 30, 1986

Weather: Low clouds, 68°F, no wind, 08:20.



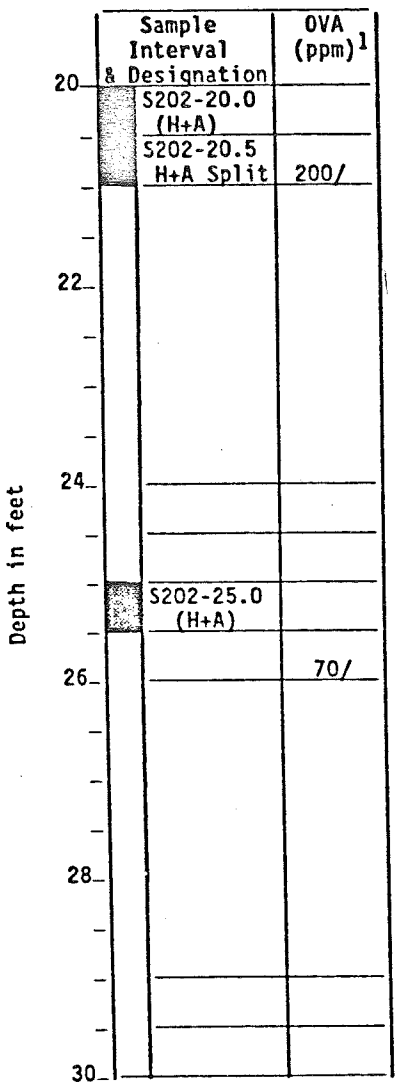
Sample Interval & Designation	OVA (ppm)[1]	Depth Interval (feet)	Group Symbol[2]	Soil Description
		7.5-16.0	ML	SANDY SILT: (continued)
		16.0-18.0	ML	SAME AS 7.5-16.0 except grayish brown, 2.5Y 5/2.
		18.0-22.0	CL	CLAY: Grayish brown, 2.5Y 5/2, slightly moist, stiff, trace of sand, moderately plastic.
	90/			

1 OVA measurements indicated are soil reading/background reading in parts per million.
2 Unified Soil Classification system ASTM (D-2487)

TABLE 2
LOG OF SOIL BORING S-202 (continued)

Date: September 30, 1986

Weather: Clear sky, 70°F, light wind from southeast, 09:00.



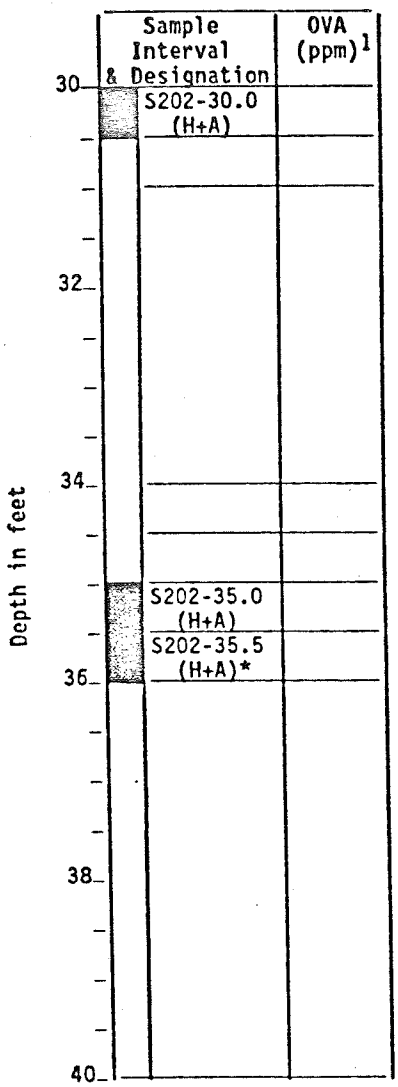
Sample Interval & Designation	OVA (ppm)[1]	Depth Interval (feet)	Group Symbol[2]	Soil Description
S202-20.0 (H+A)		18.0-22.0	CL	CLAY (continued)
S202-20.5 H+A Split	200/			
		22.0-24.5	ML	SANDY SILT: light yellowish brown, 2.5Y 6/4, moist, firm; sand is fine grained.
		24.5-31.0	SP	SAND: light yellowish brown, 2.5Y 6/4, moist, medium dense, fine grained, spherical to subprismoidal, angular to subangular, trace mica.
S202-25.0 (H+A)				
	70/			

1 OVA measurements indicated are soil reading/background reading in parts per million.
2 Unified Soil Classification system ASTM (D-2487)

TABLE 2
LOG OF SOIL BORING S-202 (continued)

Date: September 30, 1986

Weather: Clear, 72°F, light wind from east, 09:30.



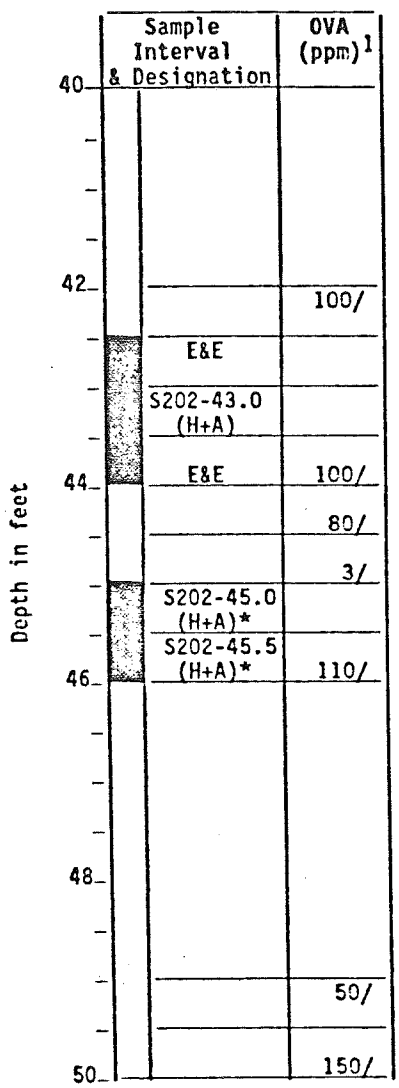
Sample Interval & Designation	OVA (ppm)[1]	Depth Interval (feet)	Group Symbol[2]	Soil Description
S202-30.0 (H+A)				
		31.0-31.5	SP	SAME AS 24.5-31.0 except pale yellow, 2.5Y 7/4.
		31.5-38.0	SP	SAME AS 24.5-31.0
S202-35.0 (H+A)				
S202-35.5 (H+A)*				
		38.0-41.0	SP	FOSSILIFEROUS SAND: light olive brown, 2.5Y 5/4; moist, dense, predominantly angular fossil fragments, fine grained, moderately well cemented with some very well cemented fragments, calcareous.

* Sample to be extracted only.
1 OVA measurements indicated are soil reading/background reading in equivalent parts per million of methane.
2 Unified Soil Classification System ASTM (D-2487)

TABLE 2
LOG OF SOIL BORING S-202 (continued)

Date: September 30, 1986

Weather:



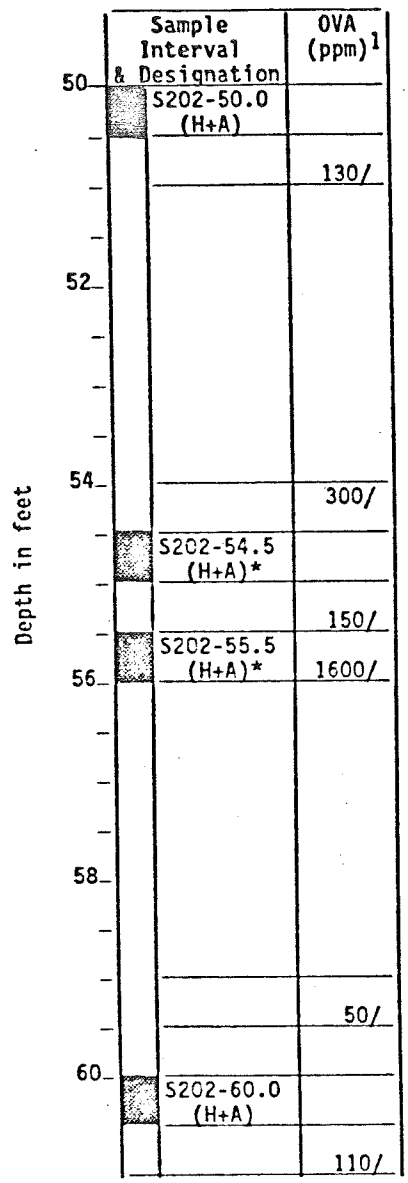
Depth Interval (feet)	Group Symbol[2]	Soil Description
38.0-41.0	SP	SAND (continued)
41.0-44.5	SP	SAND: light yellowish brown, 2.5Y 6/4 moist, medium dense to dense, fine grained, subdiscoidal to subprismoidal, angular to subangular, micaceous.
44.5-46.0	SP	SAME AS 41.0-44.5 except light gray, 10YR 7/1, with strong brown streaks, 7.5YR 5/8.
46.0-60.5	SP	SAME AS 41.0-44.5.

* Sample to be extracted only.
1 OVA measurements indicated are soil reading/background reading in equivalent parts per million of methane.
2 Unified Soil Classification System ASTM (D-2487)

TABLE 2
LOG OF SOIL BORING S-202 (continued)

Date: September 30, 1986

Weather: Clear, 76°F, light wind from south, 11:50.



Sample Interval & Designation	OVA (ppm)[1]	Depth Interval (feet)	Group Symbol[2]	Soil Description
S202-50.0 (H+A)		46.0-60.5	SP	SAND (Continued)
	130/			
	300/			
S202-54.5 (H+A)*				
	150/			
S202-55.5 (H+A)*	1600/			
	50/			
S202-60.0 (H+A)		60.5-61.0	SP	SAME AS 41.0-44.5 except light gray, 10YR 7/1.
	110/			

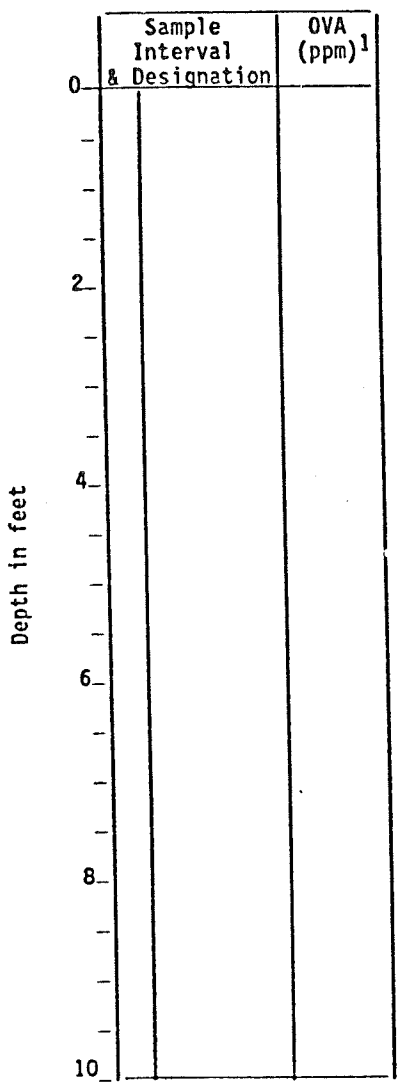
TOTAL DEPTH: 61 feet

* Sample to be extracted only.
1 OVA measurements indicated are soil reading/background reading in equivalent parts per million of methane.
2 Unified Soil Classification System ASTM (D-2487)

TABLE 3
LOG OF SOIL BORING S-203

Date: October 1, 1986

Weather: Cloudy, 68°F, moderate wind from east, 08:35.



Depth Interval (feet)	Group Symbol[2]	Soil Description
0-0.25		ASPHALT
0.25-0.75		GRADE MATERIAL
0.75-9.0		FILL: Bricks, concrete fragments and debris in clay matrix; sweet odor.
9.0-12.0	CL	SANDY CLAY: light olive brown, 2.5Y 5/4, moist, stiff, moderately plastic; sand is fine grained; sweet odor.

1 OVA measurements indicated are soil reading/background reading in parts per million.

2 Unified Soil Classification System ASTM (D-2487)

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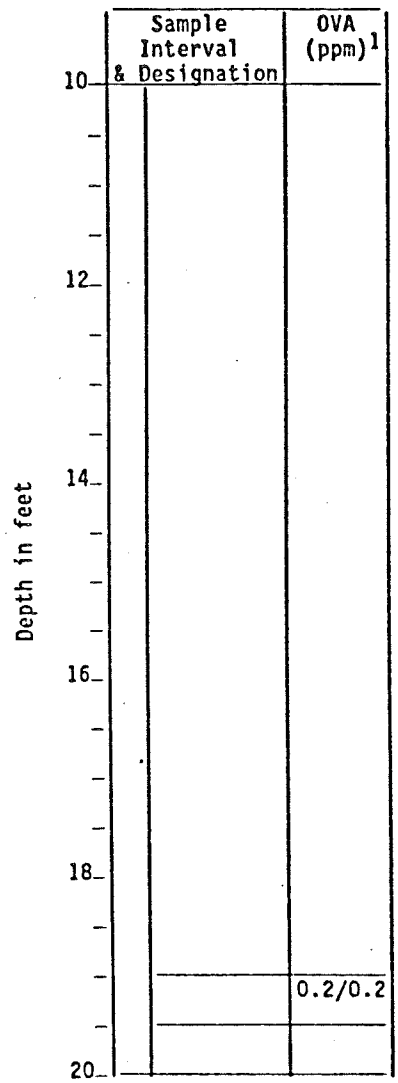
TABLE 3
LOG OF SOIL BORING S-203 (continued)

Date: October 1, 1986

Weather:



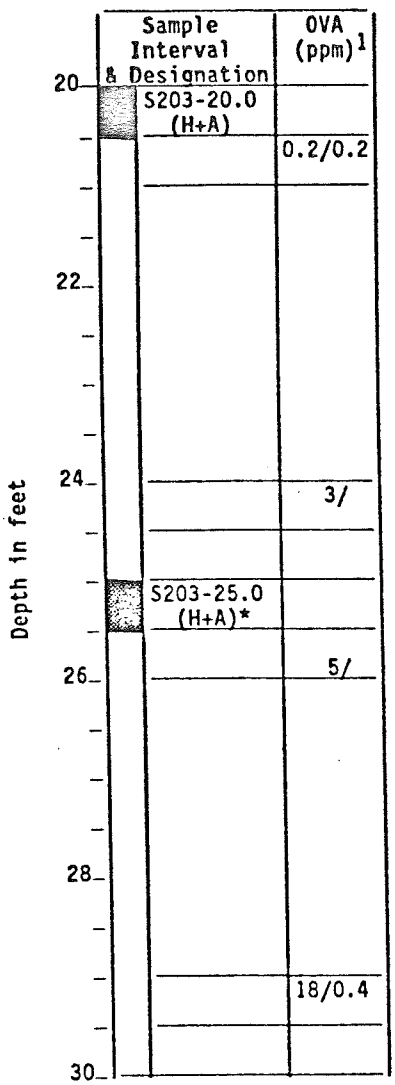
Sample Interval & Designation	OVA (ppm)[1]	Depth Interval (feet)	Group Symbol[2]	Soil Description
		9.0-12.0	CL	SANDY CLAY (continued)
		12.0-17.0	CL	SAME AS 9.0-12.0 except inclusions of pale red silt, nonplastic; very moist to wet.
		17.0-23.0	CL	SAME AS 9.0-12.0
	0.2/0.2			

1 OVA measurements indicated are soil reading/background reading in parts per million.
2 Unified Soil Classification System ASTM (D-2487)

TABLE 3
LOG OF SOIL BORING S-203 (continued)

Date: October 1, 1986

Weather: Cloudy, 66°F, moderate wind from east, 09:20.



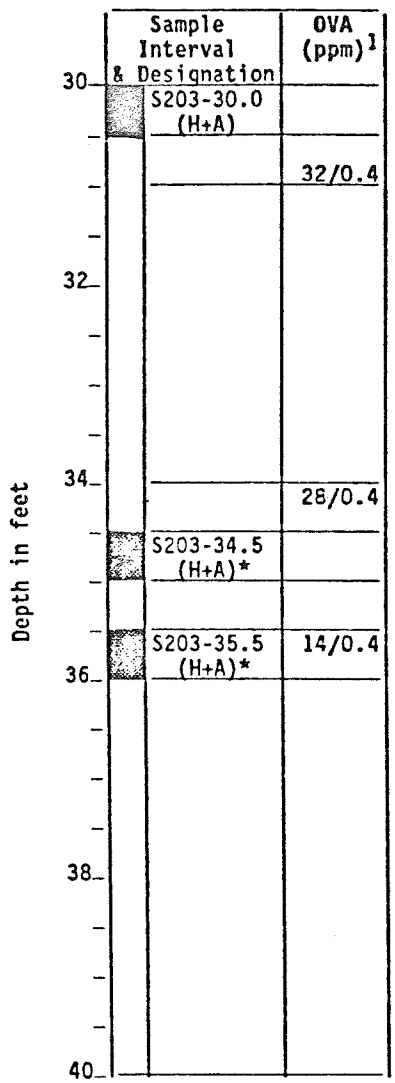
Depth Interval (feet)	Group Symbol[2]	Soil Description
	CL	SANDY CLAY (continued)
23.0-24.0	SC	CLAYEY SAND: light olive brown, 2.5Y 5/4, medium dense, spherical to subprismoidal, angular to subangular, moderately plastic; sweet odor.
24.0-36.5	SP	SAND: light yellowish brown, 2.5Y 6/4, moist, medium dense, fine grained, spherical to subprismoidal, angular to subangular, some mica, sweet odor.

* Sample to be extracted only.
1 OVA measurements indicated are soil reading/background reading in equivalent parts per million of methane.
2 Unified Soil Classification System ASTM (D-2487)

TABLE 3
LOG OF SOIL BORING S-203 (continued)

Date: October 1, 1986

Weather:



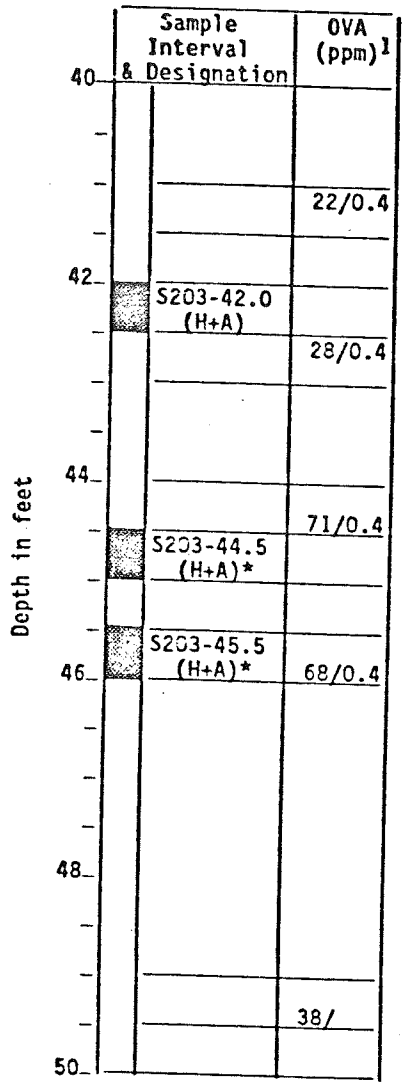
Depth Interval (feet)	Group Symbol[2]	Soil Description
24.0-36.5	SP	SAND: (Continued)
36.5-38.0	SP	FOSSILIFEROUS SAND: Pale brown, 10YR 6/3, moist, dense, predominantly fine to coarse angular fossil fragments with fine grained sand, poorly cemented, calcareous, sweet odor.
38.0-41.0	SP	SAME AS 36.5-38.0 except moderately well cemented with occasional very well cemented fossil fragments.

* Sample to be extracted only.
1 OVA measurements indicated are soil reading/background reading in equivalent parts per million of methane.
2 Unified Soil Classification System ASTM (D-2487)

TABLE 3
LOG OF SOIL BORING S-203 (continued)

Date: October 1, 1986

Weather: Cloudy, 66°F, moderate wind from southeast, 11:30.



Depth Interval (feet)	Group Symbol[2]	Soil Description
38.0-41.0	SP	SAND (Continued)
41.0-44.0	SP	SAND: Light gray, 10YR 7/2, moist, dense, fine grained, subdiscoidal to subprismoidal, angular to subangular, micaceous.
44.0-45.0	SP	SAME AS 41.0-44.0 except light brownish gray, 10YR 6/2.
45.0-49.5	SP	SAME AS 41.0-44.0

* Sample to be extracted only.
1 OVA measurements indicated are soil reading/background reading in equivalent parts per million of methane.
2 Unified Soil Classification System ASTM (D-2487)

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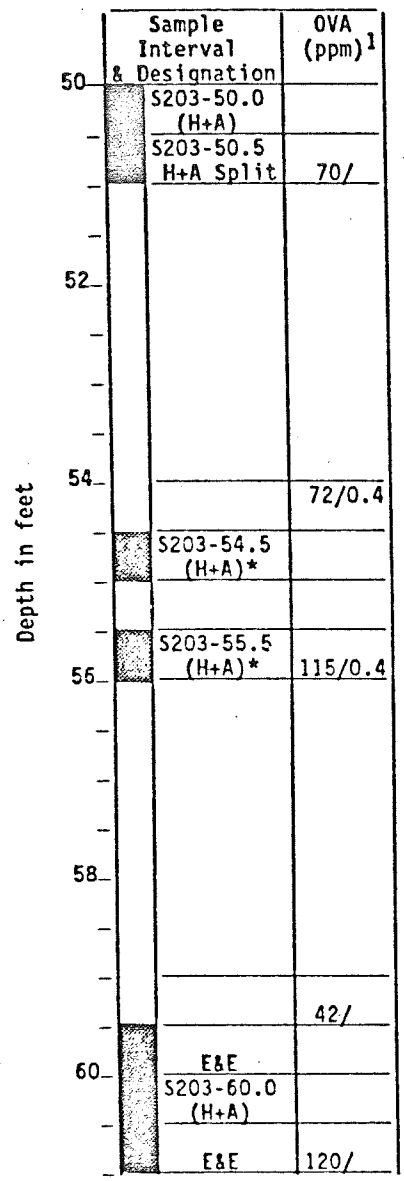
TABLE 3
LOG OF SOIL BORING S-203 (continued)

Date: October 1, 1986

Weather: Cloudy, 68°F, light wind from west, 13:00.



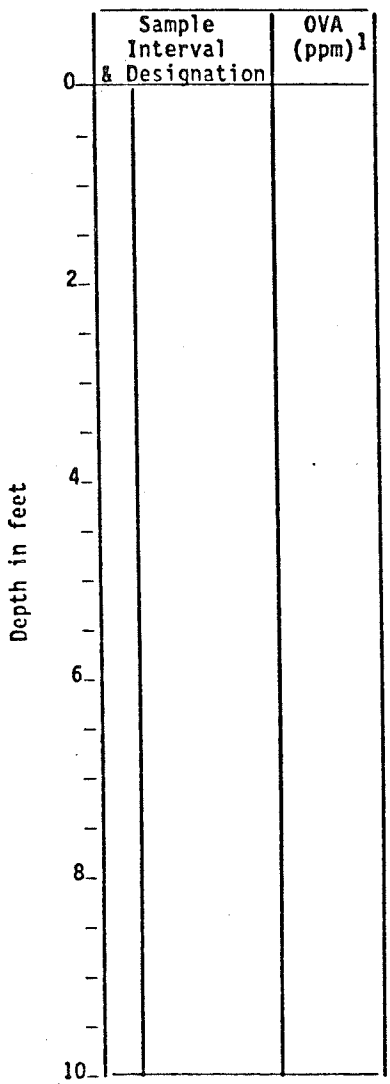
Sample Interval & Designation	OVA (ppm)[1]	Depth Interval (feet)	Group Symbol[2]	Soil Description
S203-50.0 (H+A)		49.5-50.5	SP/CL	SAND WITH CLAY INTERBEDS: Olive, 5Y 5/3, moist, medium dense and firm; sand is fine grained, spherical to subprismoidal, angular to subangular, micaceous; clay is moderately plastic.
S203-50.5 H+A Split	70/			
		50.5-54.0	SP	SAND: Pale olive, 5Y 6/3, moist, medium dense, fine grained, spherical to subprismoidal, angular to subangular, micaceous.
		54.0-55.0	SP/CL	SAME AS 49.5-50.5
	72/0.4			
S203-54.5 (H+A)*		55.0-59.0	SP	SAND: Light gray, 5YR 7/1, moist, dense, fine grained, subdiscoidal to subprismoidal, angular to subangular, micaceous.
S203-55.5 (H+A)*	115/0.4			
		59.0-60.5	SP	SAME AS 55.0-59.0 except pale brown, 10YR 6/3.
	42/			
E&E				
S203-60.0 (H+A)		60.5-61.0	SP	SAME AS 55.0-59.0 except light gray, N 7/0; slightly moist.
E&E	120/			
				TOTAL DEPTH: 61 feet

* Sample to be extracted only.
1 OVA measurements indicated are soil reading/background reading in equivalent parts per million of methane.
2 Unified Soil Classification System ASTM (D-2487)

TABLE 4
LOG OF SOIL BORING S-204

Date: September 23, 1986

Weather: Clear, 72°F, cloudy on horizon, strong wind from west, 15:20.



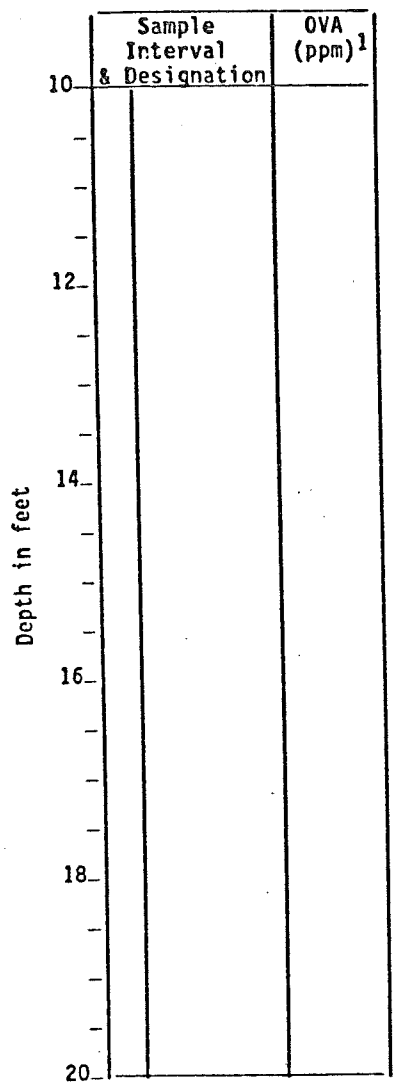
Sample Interval & Designation	OVA (ppm)[1]	Depth Interval (feet)	Group Symbol[2]	Soil Description
		0-0.25	--	ASPHALT
		0.25-0.75	--	GRADE MATERIAL
		0.75-4.5	--	FILL: bricks, gravel, concrete fragments in clay matrix, sweet odor.
		4.5-7.0	CL	SANDY CLAY: light olive brown, 2.5Y 5/4, slightly moist, firm to stiff, moderately plastic.
		7.0-8.0	CL	SAME AS 4.5-7.0, except dark brown, 10YR 4/3.
		8.0-10.0	SC	CLAYEY SAND: brown, 10YR 5/3, slightly moist, medium dense, slightly plastic; sand is fine grained.

1 OVA measurements indicated are soil reading/background reading in parts per million.
2 Unified Soil Classification System ASTM (D-2487)

TABLE 4
LOG OF SOIL BORING S-204 (continued)

Date: September 23, 1986

Weather:



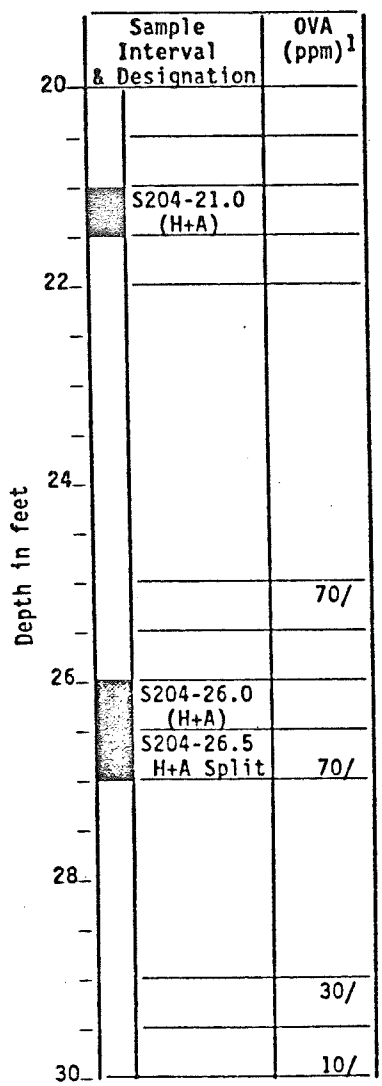
Depth Interval (feet)	Group Symbol[2]	Soil Description
10.0-24.0	SC/CL	CLAYEY SAND-SANDY CLAY: brown, 10YR 5/3, slightly moist, stiff, moderately plastic; sand is fine grained; sweet odor.

1 OVA measurements indicated are soil reading/background reading in parts per million.
2 Unified Soil Classification System ASTM (D-2487)

TABLE 4
LOG OF SOIL BORING S-204 (continued)

Date: September 23, 1986

Weather:



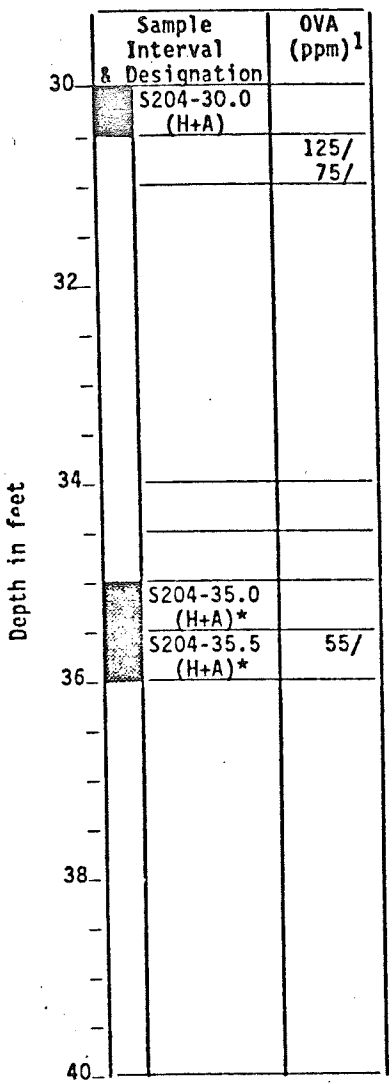
Depth Interval (feet)	Group Symbol[2]	Soil Description
10.0-24.0	SC/CL	CLAYEY SAND-SANDY CLAY (continued)
24.0-35.25	SP	SAND: light yellowish brown, 2.5YR 6/4, moist, medium dense, fine grained, angular to subangular, spherical to subprismoidal, trace of mica.

1 OVA measurements indicated are soil reading/background reading in parts per million.
2 Unified Soil Classification System ASTM (D-2487)

TABLE 4
LOG OF SOIL BORING S-204 (continued)

Date: September 25, 1986

Weather: Partly cloudy, 60°F, strong wind from west, 10:45.



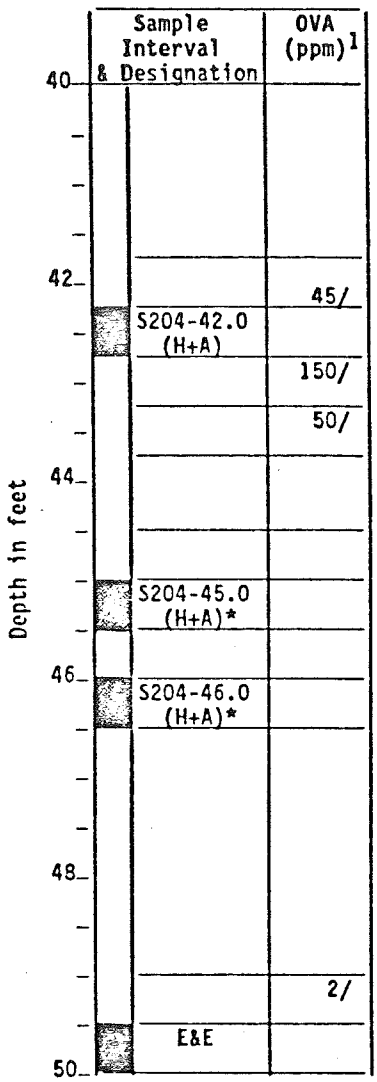
Sample Interval & Designation	OVA (ppm)[1]	Depth Interval (feet)	Group Symbol[2]	Soil Description
S204-30.0 (H+A)		24.0-35.25	SP	SAND (Continued)
	125/ 75/			
S204-35.0 (H+A)*		35.25-37.0	SP	FOSSILIFEROUS SAND: very pale brown, 10YR 8/3, medium dense, predominantly fine to coarse angular fossil fragments with fine sand, poorly cemented, calcareous.
S204-35.5 (H+A)*	55/	37.0-41.0	SP	SAME AS 35.25-37.0 except, moderately well cemented with very well cemented fossil fragments.

* Sample to be extracted only.
1 OVA measurements indicated are soil reading/background reading in equivalent parts per million of methane.
2 Unified Soil Classification System ASTM (D-2487)

TABLE 4
LOG OF SOIL BORING S-204 (continued)

Date: September 25, 1986

Weather: Partly cloudy, 84°F, strong wind from west, 16:30.



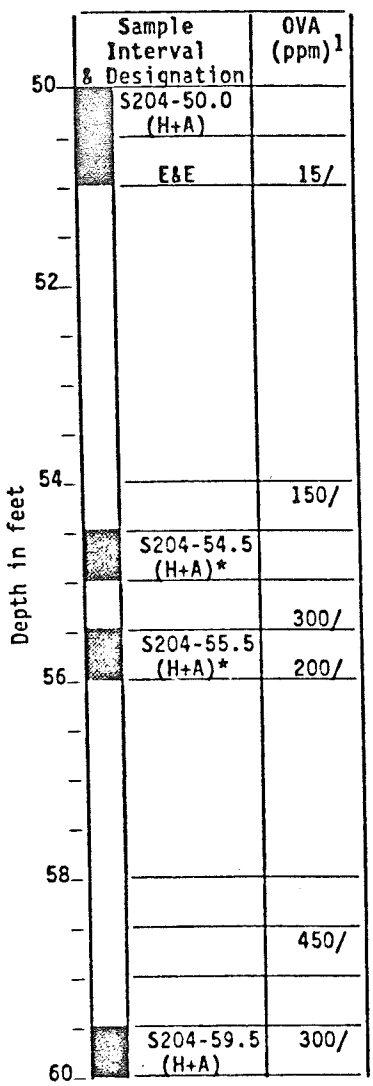
Depth Interval (feet)	Group Symbol[2]	Soil Description
41.0-48.0	SP	SAND: light yellowish brown with orange mottle, 2.5Y 6/4, moist, medium dense, spherical to subprismoidal, angular to subangular, micaceous.
48.0-51.0	SP/SC	SAND WITH CLAYEY SAND INTERBEDS: olive, 5Y 5/3, dense; sand is fine grained, micaceous; interbeds are moderately plastic.

* Sample to be extracted only.
1 OVA measurements indicated are soil reading/background reading in equivalent parts per million of methane.
2 Unified Soil Classification System ASTM (D-2487)

TABLE 4
LOG OF SOIL BORING S-204 (continued)

Date: September 25, 1986

Weather:



Depth Interval (feet)	Group Symbol[2]	Soil Description
48.0-51.0	SP/SC	SAND WITH CLAYEY SAND INTERBEDS (continued)
51.0-55.0	SP/SC	SAME AS 48.0-51.0 except yellowish brown, 2.5Y 6/4.
55.0-56.0	SP	SAND: light yellowish brown, 2.5Y 6/4, moist, medium dense, fine grained, spherical to subprismoidal, angular to subangular, micaceous.
56.0-57.0	ML	SAME AS 55.0-56.0 except silty.
57.0-60.0	SP	SAME AS 55.0-56.0

TOTAL DEPTH: 60 feet.

* Sample to be extracted only.
1 OVA measurements indicated are soil reading/background reading in equivalent parts per million of methane.
2 Unified Soil Classification System ASTM (D-2487)

TABLE 5

SPLIT SAMPLES

SPLIT SAMPLE NUMBER	DATE	PRIMARY SAMPLE NUMBER
S201-46.5	09-26-86	S201-46.0
S202-20.5	09-30-86	S202-20.0
S203-50.5	10-01-86	S203-50.0
S204-26.5	09-23-86	S204-26.0

TABLE 6

RINSATE SAMPLES

SAMPLE NUMBER:	R-S204-58
DATE:	09-25-86
TIME:	16:30
SOURCE:	Drive Sampler Rinse Water
ORGANIC FREE WATER LOT NUMBER:	A0244
ANALYSIS:	EPA 624
SAMPLE NUMBER:	R(A)-9-25-86
DATE:	09-25-86
TIME:	14:30 to 15:30
SOURCE:	Drive Sampler Rinse Water
ORGANIC FREE WATER LOT NUMBER:	A0244
ANALYSIS:	EPA 608

Illustrations

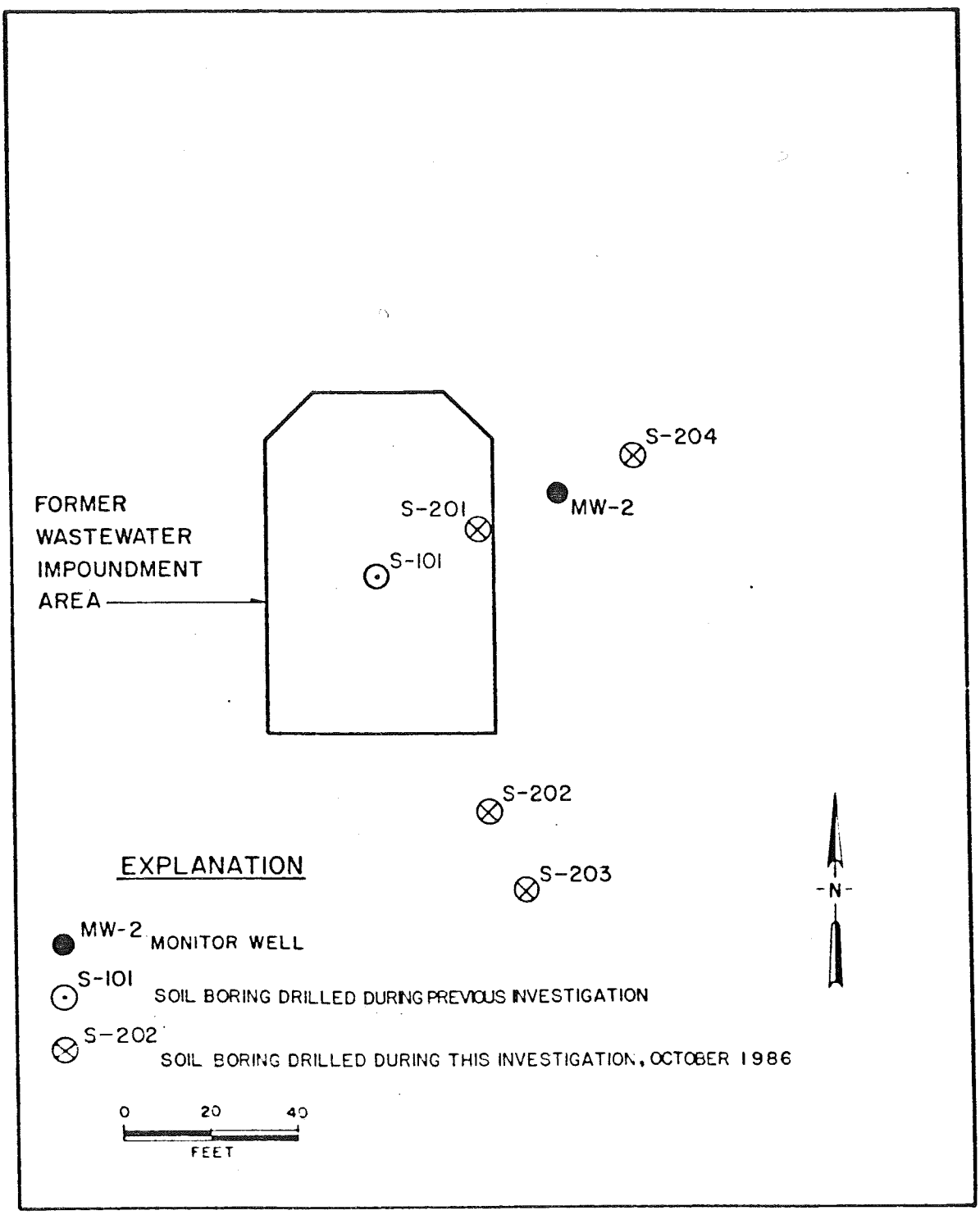


FIGURE 1. LOCATION OF SOIL BORINGS